

## Chapter 4

### Health Information and Communication Technology (Health ICT) for private practice

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#### **INTRODUCTION**

There was a time when medical practices could be run without the help of computers. There may still be a few practices like that, but they are probably rather small, rather quiet, and rather old fashioned. Like it or not, computers and **Health Information and Communication Technology (Health ICT)** are going to play a huge role in your new practice, a potential minefield of hidden or unexpected costs, hassles and frustrations, and yet, an equally viable means of making your practice cheaper to run, smoother to administer, and a great means of enhancing patient care. The choice is yours to make, and the very start of your practice is the best time to make it.

This article offers sound advice on the very basics of setting up your systems, but is also aimed at the ‘early adopters’ among you who will make the best use of what **Health ICT** can offer and who in doing so will reap the rewards.

Through this article we will draw your attention to various ‘reality checks’. **Some are really, really important!** Ignore them, and, despite being the best doctor you can possibly be, you are setting yourself up for a struggle at best, and economic failure at worst!

*Reality Check # 1:*

*Medical Practice is both a profession and a business*

We doctors are given little or no business training, having to pick things up as we go along. No wonder some practices take years to succeed as businesses! But Health ICT has a valuable contribution to make.

**Health ICT** aims to:

- Impact *clinical practice*, i.e., the way you do your work.
- Enhance clinical outcomes, i.e., to *improve the* quality of your diagnoses and treatments.
- Improve *practice productivity* – i.e., to increase business efficiency of your practice.

*Reality Check # 2:*

*Clinical skills drive your PRACTICE, technology drives your BUSINESS*

But, as a realist, technology does come with its complications!

- Computers are expensive
- All computers need regular maintenance
- All computers will have software crises, bugs, and viruses from time to time
- You will need lots of support from your ‘IT guy’
- IT guys are always busy and may not be available the moment you need them
- Networks are temperamental
- Software goes out of date and needs to be upgraded
- Expect to change or upgrade each computer at least every three years – you can write off the total cost of your equipment over this period to tax.
- No practice I’ve ever heard of got all its systems completely sorted out and working smoothly for at least six months
- Internet access is never available all the time, and never as quick as the providers promise
- Some people and computers just do not get along.

With these realistic expectations in mind, you can make your computers work for you, rather than just being a necessary evil and a drain on your finances. In this chapter we are going to explore the development of computer systems for medical practice, the separate components, and the people involved, with a final look at the direction in which eHealth is headed.

## **THE PAST, PRESENT AND FUTURE**

We are in a completely new era of medical information systems. Over the past two decades, information technology has emerged from simple back-office computerisation and automation of practice administration to encompass comprehensive and sophisticated systems that support clinical services. This transition has come in at least four distinct phases:

**Phase 1** (1980’s) began when practice administrators adopted technologies for office automation (e.g., photocopy machines and faxes). By the 1990’s, ready access to computers and medical billing software permitted electronic submission of claims (EDI: electronic data interchange), e-mail and the Internet.

**Phase 2** (Late 1990’s) saw the advent of the paperless office, converting from paper-based patient records to electronic information-based technologies.

**Phase 3** (Present day) heralds the **Electronic Patient Record (EPR)**: Medical practices can now embrace the full spectrum of Health ICT including:

- Practice billing via PMAs (Practice Management Administration) systems – with electronic patient booking systems, patient recalls and reminders.
- Clinical record keeping via EPR systems where patient care is recorded in digital format.
- Digital x-rays and digital pictures of clinical observations (digital imaging).
- Voice recording of patient observations.
- Electronic diagnostic and health measurement devices.
- Consumer-based health care where patients initiate the patient education process through obtaining diagnosis and care information from the Internet.

These solutions have all improved operational efficiency, enhanced quality of care, improved patient diagnosis, better facilitated the processes around patient care, enhanced patient education and communication and streamlined practice reimbursement (such as electronic payment by patients and insurers).

**Phase 4** (2010 and beyond) is the era of **eHealth**. Over the next decade medical practice will further benefit from next generation solutions such as:

- extended **Electronic patient records** (EPRs) maintaining records of continuity of care,
- sharing of patient information between role players in the care process (e.g., between clinician, disease management teams and insurers),
- online access to patient clinical and insurance information (including verification of insurance benefits),
- real-time claims submissions,
- telemedicine (remote, 24/7 access to patients),
- use of telehealth or telemedicine devices for chronic disease management,
- and even creating virtual patient care offices – all in the name of **eHealth**.

Studies on the impact of Health ICT in medical practice support the lessons learnt in other industries. For example, the banking industry lowered transaction costs of individual banking transactions and introduced self-help automated ATM systems through ICT, and the airline industry converted to on-line booking systems and ticket-less check-ins. Both industries lowered administration and overhead costs and in the process made it possible to service a rapidly growing client base, yet lowering the *per capita* cost of a unit of service.

Before delving too deeply into the advances in and benefits of ICT, what are the basic requirements of any practice?

## **THE HARDWARE**

### ***What computer do you buy?***

Most doctors seem to own a laptop, and may even have a desktop and laptop on their desks. I use mine predominantly for reading email, recording operation reports, writing letters to referring doctors, viewing of x-rays, storing recorded procedure videos, motivations to medical aids and radiology requests. Your receptionist and/or bookkeeper will certainly need one, predominantly for billing and accounts. But if that is all your computer does for you, you will be missing out on huge opportunities to make your practice easier and cheaper to staff and run.

The main administration computer need only do ‘workhorse’ functions, such as run the billing system, print accounts, and log onto the Internet. DVD reader/writers may be used for back up of billing data, however, USB plug-in and removable hard disk drives are more reliable for copying data.

Bear in mind that new software is written taking technological advances in mind, and new integrated systems require more computer processing power and memory. The advent of web-based services also means that computers should be ready for the web – i.e., should be fitted with network connections for broadband data transfer.

Apple Macs are pricey but very user friendly, high speed, powerful, quick in boot up and shut down times, and can run dual operating systems. However, technical support may be only be available in large cities and this may become problematic. If your iMac breaks down on you, it may take weeks to find an agent and to repair it.

An extended warranty, if offered, is very useful, and will cover your machine for major breakages over the useful life of the machine.

See Appendix 1 on <http://www.doctorspace.net/newpractice.htm> for a detailed check list on computer hardware and ancillaries.

### ***Networks***

If there is more than one computer in the practice, you will want to link them together with a network so they can communicate. This allows you to have one Internet connection, used by all computers, and to share printers and other resources. Modern networks can operate without cables, i.e. by wireless, but these are generally not as stable as cable networks, and incorporate more sophisticated and expensive hardware that can break down and need replacing. Another problem with a wireless network is that of security, and your ‘IT guy’ will have to set your system up with passwords and other security so that your system cannot be trespassed by those with malicious intent. This is critical when dealing with patient information. Installation costs of cable networks may be higher, but usually pay off in the long run because these are less likely to cause you trouble.

### ***Internet access***

South Africa still lags behind the rest of the world in terms of low cost and fast Internet access. There are many options open to the user, and product offers change every day. What I would suggest is that you have at least two options, i.e. ADSL for your rooms, but a 3G wireless modem for your laptop, so that you have mobile access such as when moving between consulting room, theatre, and home.

### ***Printers***

Printers themselves are relatively inexpensive, however the cost of printers with refill ink cartridges is hidden in the ink replacement part. My advice is to buy a multifunction printer that is quick and quiet in printing and with copy and scan functions digital image storage. Colour options are great, but expensive. The ‘workhorse’ of most practices still remain the standard black and white laser printer.

### ***Fax machines***

New technology allows one to receive and send faxes by scanner and email. The new modern practice has no need of a fax machine – paper and ink for printing faxes are expensive!

### ***Scanners***

A scanner is important if you do not have a fax machine, and is incorporated into many printers. A high-speed dedicated scanner than can copy both sides of a page at once, and scan batches of pages, is very handy for storing patient files in a digital format. Although more expensive, the ability to scan large documents quickly and efficiently makes them cost effective.

## **THE SOFTWARE**

### ***Office software and operating systems***

A computer that sells for R7000 will usually include software of about R2500 in value. Of this, Windows operating system is still the most popular and reliable. There is a growing trend in global IT to offer basic software for free, or as ‘open source’ software. Almost every established product can be found in another form at either a fraction of the price or free! When it comes to word processing and other office documentation, a significant saving can be made by using open source software like Sun Microsystems Open Office. This compares well to Microsoft Office, and it is freely downloadable off the Internet. Files can be converted to Microsoft file format if need be.

### ***Billing systems – PMA’s and EPR’s***

There are many different billing systems on the market, and most do some of the same things, i.e. record patient data, record consultation and procedure codes, consumables, and produce accounts for the patient and for the medical aid, and provide analysis of trends within the practice. Today however there are two distinct options: “Practice Management Administrations” (PMA’s) and “Electronic Patient Records (EPR’s).”

Electronic Patient Record systems capture clinical information, treatment records as well as billing transactions into a single *integrated electronic* patient file. The primary difference between PMAs and EPRs is the way the latter manage clinical information. EPRs are primarily

*patient centric* in their underlying design whereas PMAs either do not deal with clinical information at all or they consider it as of secondary importance. PMA's are designed essentially on an *account centric* basis and mostly manage debtor (billing) transactions in order to create patient accounts.

**Table 1: Comparison: EPR and PMA systems**

	<b>PMA (Billing Centric)</b>	<b>EPR (Patient Centric)</b>
1. Patient demographic information	✓	✓
2. Clinical Notes: Medical history (including medications dosage; allergies; relevant family histories), charting, clinical examination, assessment and diagnosis	✗	✓
3. Treatment Planning	✗	✓
4. Treatment Estimates / Patient Quotations	✗	✓
5. Integrated Appointments and scheduling	✗	✓
6. Informed Consent and Patient Communication	✗	✓
7. Patient Billing	✓	✓
8. Disease-based Recalls + Follow-up	✗	✓
9. Progress Notes, Chronology of treatment history (clinical records and notes), Completion notes	✗	✓
10. EDI	✓	✓
11. Integrated Accounting system	Optional	Optional
12. Integrated digital x-ray	✗	✓
13. Integrated clinical video imaging	✗	✓
14. Electronic filing module for all patient documents (letters of referral, doctor notes)	✗	✓
15. Office automation (SMS, auto-phone dialler, patient ID video photo)	✓	✓
16. Patient education materials	✗	✓

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To further muddy the pond, there is also the Electronic Health Record (EHR) - a system of aggregating and collating depersonalised, anonymous EPR data for the purpose of disease surveillance. This information is invaluable to health economists, medical insurers etc., and allows the drawing up of health strategies and policy formulation.

It is not the scope of this article to discuss the merits of each and every program on the market, but rather to point out the different payment models and costs inherent in each, and the advantages and disadvantages of each:

*Option 1:* Outsource the whole PMA process. With this model, external, independent companies do all your billings, data capture, accounts, follow up and bad debt recovery. Your receptionist simply sends the data to the company on a daily basis. Fees are usually a percentage of monthly income, with a minimum and perhaps a capped maximum. Account queries are referred directly to the company. Advantages are that the amount of work your practice has to do is diminished, the work is not affected by staff leave or sickness, and many costs are covered, i.e. printing, postage etc. The main disadvantage is the vulnerability in leaving such an important function in other hands. The company record and reliability is critical.

*Option 2:* Buy the software package. This may have a considerable up-front fee, and support will cost extra thereafter. The downside of this approach is that the software company can withdraw support at any time, or change the terms to a monthly subscription only, or close down altogether.

*Option 3:* A monthly subscription: Expensive in the long term, but at least you have the option of changing systems without too much drama.

*Option 4:* Open source system: There are many open source practice administration systems available on the Internet, but they mostly cater for the USA market, and probably will not comply with local requirements for procedural codes, and NAPPI codes. If however you have a very narrow scope of practice, with only a few consultative, diagnostic and procedural codes, one of these may do the job. Of all these options, this is probably the riskiest in the long term, and should be considered very carefully before being adopted.

### ***Paperless practice***

There is a **growing trend** to move towards EPR's - completely digital practice, i.e. no paper files or records whatsoever. While this initially demands some outlay on quality computer equipment, and a quantum shift in one's own thinking, the advantages in the long term are obvious. Filing cabinets and files are very expensive, as is stationary, and associated printing costs can be surprisingly high. Finding space for file storage can become more costly than digital options. The process of finding and filing patient records is labour intensive. With digital technology, one's whole practice record can be carried around on a laptop hard drive, and files found with a few clicks of a mouse. Digital files, if backed up somewhere, are less likely to get lost. Modern tablet technology allows hand-writing direct to a digital document, easy emailing of prescriptions, and patient reports. Modern speech recognition technology is capable of 'direct to document' transcription of letters, operation reports, and clinical records. All of this equates to considerable savings in time and money.

In addition, compared to paper-based systems, PMAs / EPRs save time and costs through:

- Sending SMS text messages to patients rather than making phone calls to their mobile phones.
- Creating mail-merge functions for bulk mailing rather than creating individualized correspondence one-by-one.
- Using least-cost routing solutions for economizing on phone calls – especially to mobile phones.
- Implementing new generation computerized telephony systems (PABX systems).

The downside of paperless practice is that data has to be backed up, and secure, i.e. if your laptop is stolen, the patient files must be copied in a safe storage somewhere else, and should not be accessible to anyone not authorised to do so. Some systems automatically protect hard disk data with automatic encryption, and without a password this data cannot be accessed by the wrong person.

A good idea if you have a network is to back data up to an external hard drive that is concealed somewhere in the practice where it will not be stolen or damaged easily.

For a health system itself, EPR management can contribute decisively to quality of care in terms of:

- Clinical information and data management
- Outcome and result management
- Logistics and order management
- Decision support systems
- Electronic communication and connectivity
- Patient education and support
- Administrative processes and reporting
  
- Reporting and population health<sup>1</sup>.

All of these issues are critical to the broader picture in terms of economic management of health systems.

*Reality Check # 3:  
The focus of Health ICT is quality of care*

### ***Communications***

E-mailing patient information (such as treatment estimates and statements) is sharing **confidential patient information** across the Internet. Since the Internet can never be entirely secure, it is strongly recommend that practices compile a set of clear practice guidelines and protocols regarding standard ethical practices of patient communication (appendix 2).

‘E-mail’ versus paper-based patient correspondence has the following benefits

- Costs - saving paper, postage etc.
- Time (no folding letters, printing addresses on envelopes, or visiting the post office).
- Improving overall document flow and management, contributing to practice efficiency, and office productivity.
- Enhancing speedy patient communication.
- Improving professional presentations to patients.
- Maintaining medico-legal governance through saving copies of documents in the e-mail system’s *Sent Items* folder for confirmation of communication.
- Shortened turn-around time – quicker responses - responding to patients’ need to be informed.

See Appendix 2 on <http://www.doctorspace.net/newpractice.htm> –for criteria for secure email correspondence

***How do you make a choice?***

It is not the purpose of this chapter to recommend specific hardware brands or models, configurations, operating systems, and networking options. It would be more appropriate to rather outline a **strategy** for hardware and software selection, bearing in mind that over the past 10 years, hardware configurations have been changing on average every 6 months!

Strategies for hardware and software selection:

- Firstly, contract a practice **technology partner** – a technically qualified person who is in the business of supplying practice computer hardware, software and Health ICT technology. Most professional technology partners will want to undertake their own needs assessment.
- Secondly, instruct the technology partner to identify the hardware, software, networking and other Health ICT device specifications required for the practice’s clinical, administrative and business functions. The practice technology partner may obtain these technical specifications from the different hardware, software (e.g., the suppliers of your PMA / EPR systems) and Health ICT vendors.
- Thirdly, draft the technology decision-making criteria that would best meet your practice’s current and future requirements. Use these criteria to decide on product options and pricing.
- Fourthly, study the hardware, software and Health ICT support and maintenance agreements in order to understand the roles and responsibilities of the vendor, technology supplier and practice team. For example, hardware or software support agreements may be any of three types:
  - Vendor / Supplier linked agreements: These maintenance agreements are maintained directly by the vendors or suppliers themselves.
  - Agent linked agreements: The vendor / supplier outsources maintenance to third party (independent) contractors – such as the practice’s technology partner.
  - No maintenance agreement: In this situation, whenever maintenance or support is required, call-out visits are logged and are billed on an “*as and when*” basis.

## **THE PEOPLE**

### ***Your medical staff, and you!***

Implementation of new technology is often experienced as a challenge - even a threat - challenging doctors and practice staff to accept change, to learn something new, and to spend extra effort and time to adapt to new routines.

Despite all the obvious benefits, the speed of adoption of Health ICT is slower than anticipated. The Institute of Medicine reports that the average time for technology to be established in the health care industry is seventeen years and several authors report that despite the promise of EPRs as a tool to improve quality and efficiency in health care, data on their adoption rate show

(USA) that 23.9 % of physicians used EPRs in the ambulatory setting, while only 5 % of hospitals used computerized physician order entry<sup>ii</sup>.

Herein however lies an opportunity, in that early entrants into the technology should have a significant advantage.

Work with Health ICT elicits a specific, and often predictable, response from staff. Four very different “people reactions” have been observed.<sup>iii</sup>

**Table 2: Health ICT adoption Profiles**

<p><b>Early Adopters</b>  <b>10%</b></p>	<p>Early Adopters take very easily to new products and innovations – in fact, they welcome new technology and almost intuitively respond towards something new by wanting to try it out. These colleagues are comfortable to experiment with new technology, possess skills and expertise to spot their potential, “try out” new products and are often seen by others as “opinion leaders” – meaning, their opinion is often regarded as worth considering.</p>
<p><b>Followers</b>  <b>35%</b></p>	<p>Followers do not want to be left behind in the adoption of Health ICT for too long. They often follow closely on the footsteps of Early Adopters and, once a new technology has been given a “clean bill of health”, they are quick to follow the lead of Early Adapters. These colleagues are knowledgeable about Health ICT, they often make a study of the different products that are available and spend time looking at options.</p>
<p><b>Laggards</b>  <b>40%</b></p>	<p>Laggards are most often very careful, conservative - often too careful about adopting new Health ICT. They do not make decisions easily, are slow to adopt changes – in fact, they often show a resistance to change. Laggards often decide to change not because they are challenged to change, but because they cannot afford not to change ... that is, they are often forced to adapt.</p>
<p><b>Never-Nevers</b>  <b>15%</b></p>	<p>These colleagues are never up to date in their practices with new technology. They constantly have a hard time just to stay in step, or to catch up. Words like “best practice”, “current thinking”, “the latest research” are threatening to them, elicit negative emotions and more often than not they actively oppose or resist change.</p>

*Early Adapter* and *Follower* practices have a better chance of advancing economically and ensuring long-term financial viability since they are better geared to make technology work for them. Typically, *Early Adapter* practices embrace change, are open to new technologies and innovations, and strive for better performance along the road of continuous quality improvements.

An appropriate investment in Health ICT will enable those ‘early adopters’ and ‘followers’ who make such investments to become leaders in an industry with an increasingly integrated system of care, ensuring:

- increased practice efficiency and personal productivity,
- enhancement of the primary role of the care process,
- creation of information-rich patient encounters,

- improvement of the quality of clinical care processes that benefit all other down-stream role-players (such as referrals to members of the health care team providing detailed and comprehensive information on patient health status, progress of care, engagement in disease management programmes, and improving continuity of care).

*Reality Check # 4:*

*The impact of Health ICT is both clinical and economic*

***Personal skills - optimal computer literacy and Health ICT competency***

Health ICT skills encompass more than merely being computer literate. While not everyone in the practice needs to be equally capable, the required skill *types* for computer and technology literacy in medical practice span three levels:

*Computer Literacy*

- Basic computer skills e.g., include competency in the Windows operating system, using the Internet, e-mail, using office software (e.g., word processor, spreadsheet), how to update anti-virus programmes (or how to check whether it auto-updates), how to navigate between the Windows Desktop and Windows File Systems using Windows Explorer, how to search for files, copy and rename files, check the date and size of files, using a CD-ROM or DVD writer.
- Practice managers are advised to seek out computer literacy training courses that are SETA accredited and that offer staff computer literacy certificates on completion of the training courses.

*Literacy with Professional / Clinical systems*

- Practice related computer skills include competency in using PMAs / EPRs and their supporting functions – such as making working backups of PMA / EPR data, checking on the hardware and software maintenance schedules, administering login passwords, checking security on the practice PMS / EPR data.
- Examples of competencies specifically related to medical practice are:
  - Using EDI
  - Accessing web-interfaces of medical aids
  - Logging on-line enquiries
  - Knowing where and how to download provider fee schedule published by health insurers
  - Requesting third-party support from vendors (which means understanding the maintenance agreements for hardware and software)
  - Understanding patient data security matters

## *Competency with Advanced Health ICT devices*

Training in operating advanced Health ICT devices (such as advanced diagnostic, x-ray or monitoring devices) is provided by suppliers. An important principle in training is multi-skilling, meaning that more than one practice team member should be able to operate a mission critical device. Multi-skilling has been proven to be key when absenteeism, transition of key-team members, work-overload, and changing working hours or shifts may create staff shortages.

See Appendix 3 on <http://www.doctorspace.net/newpractice.htm> – for a list of practice standard operating procedures

### ***Basic system maintenance:***

Like human physiological and biological systems, computer and ICT systems will break down from time to time. Even the most reliable computer is apt to eventually display operating errors. Again, like the human body, preventive care is better than curative care – and has also proven to be more economical. Pro-active Health ICT housekeeping and maintenance – require a specific set of routines.

Scheduled housekeeping routines are required to maintain reliability and functionality of computer systems. These comprise backing up of practice data, general operating system maintenance, data recovery systems, and security of data, i.e. passwords, beyond the scope of this article, but detailed in Appendix 3.

Critically, however, all practice data **MUST** be backed up on a regular basis. Failure to do so is the primary cause of ICT disasters involving data and patient record loss – avoid this nightmare at all costs!!

Support for systems is available in different forms, and is discussed in Appendix 5.

***Reality Check # 5:  
Back up, or screw up!!!***

See Appendix 4 on <http://www.doctorspace.net/newpractice.htm> for a comprehensive strategy for general **computerized system** maintenance.

See Appendix 5 on <http://www.doctorspace.net/newpractice.htm> for details on extended support

### ***Your own website***

Creating your own website used to be a complex and expensive process, but no more!! There are several online services that permit the creation of a personal website for little or no expense, using any one of a number of different templates. Anyone with a bit of computer savvy can edit these sites, and import other functionalities like online appointment systems, online new patient forms and general health questionnaires etc.

A personal website can also be a very useful resource for publishing information about your consultation and procedure costs.

## ***Support personnel***

Be wary of buying your computer from a supermarket or large discount store for the simple reason that, although you may get a cheaper deal initially, in the long run initial cost is a fraction of the ultimate price you will pay. Good IT support is more likely to come from a smaller local IT company with a good reputation. Choose your IT support with as much care as you would your obstetrician. You **will** need regular help. If you do not support your local company by buying your hardware from them, they are less likely to go out of their way to help you. Your IT guy also has complete access to your personal data when your PC goes in for repairs. This has to be taken into consideration, and is an important issue of trust!!

To take full advantage of this new era of Health ICT, you should consider appointing a health technology partner in order to assist you in getting the best out of your investment in this technology.

There is a difference between an IT technician and an IT professional. While technicians are competent in technical matters, practices should appreciate that their Health ICT requirements are not only about technical matters, but also about specialised health information management – and for this they require the input of a health IT professional. Practices should invite their technology partners to act also in advisory roles, not only in technical capacities, allowing them to make valued contributions by means of updates on new technology developments and to propose technology migration paths.

See Appendix 5 on <http://www.doctorspace.net/newpractice.htm> for details on extended support

Since the ICT industry is probably the most fluid and dynamic of all industries, the half-life of information-based technology and industry knowledge is anything between 6 – 12 months. Add to ICT the dimension of health care (Health ICT) and the complexity of this profession doubles. Staying abreast of all new technology and advances is a full time job in itself, and enhances the value of an association with a health IT professional.

## ***The doctor, the patient, and the Internet***

There is, to use a political analogy, a ‘wind of change’ blowing through the medical profession, and which impacts directly on the relationship between doctor and patient. The Information Age has made diagnosticians and physicians of everyone with access to a computer and the Internet. If you diagnose someone with, for example, Wegener’s granulomatosis, the chances are that by the next time you see that person, he or she will know as much as or more about the disease than you do. The distinction between those with knowledge – the professional – and those without – the patient - is becoming blurred with startling consequences.

For a start, ‘health consumers’, more traditionally known as ‘patients’, are becoming more involved in their illnesses and treatments. Judging by developments overseas, some are as eager to rate and judge their doctors as they do their restaurants or hair stylists. ([www.rateMDs.com](http://www.rateMDs.com)). Doctors in some healthcare systems are expected to put their outcomes and results on the internet. Hospital fees and professional fees are contrasted on websites. “Transparency” in

practice is becoming more and more essential. Although not here yet, it would be foolish to expect South African medical practice not to move in the same direction.

This can be highly uncomfortable for some professionals. (Welcome to the world of consumer-driven service delivery!) Some professionals have taken to having their patients sign agreements NOT to put ratings onto the web. In retaliation, rating agencies have suggested publishing 'walls of shame' of the doctors who do so. A grass-roots, consumer-driven South African public listing is published by [www.hellopeter.com](http://www.hellopeter.com), - enter 'doctor' in the search option, and read the comments, both good and bad! Provider rating, albeit highly one sided and unsatisfactory, is already here and functional!

Whatever your opinion of a rating system, what is inevitable is a demand that doctors do self-audits, publish their results, and subject themselves to both peer review and review by their patients. The General Medical Council in Britain is already making such announcements ([www.gmc-uk.org/register/licensing/index.asp](http://www.gmc-uk.org/register/licensing/index.asp)). Computer and software systems are going to be the only means of doing this efficiently without the high costs involved in employing staff to do so.

*Reality Check # 6:*

*Anonymity in medical practice will soon be a thing of the past! Public scrutiny of the medical profession will only increase.*

### ***Internet medical applications***

If you can imagine an application for medical practice that can be computerised, the chances are that there is one somewhere out there on the WWW.

The simplest of these in principle may be very complex in practice. Both Microsoft and Google are spending billions on development of a system for a Personal Health Record (PHR). A PHR is owned and controlled by the patient (consumer), and contains all relevant medical records from earlier consultations, treatments and investigations, i.e. data from various separate doctors' EPR's.

The potential of this type of record is the reason software giants are throwing millions of dollars into development. A patient will carry his or her own 'new patient data' on this record, so that he or she need never fill out a 'New Patient' form again. This data will integrate seamlessly with the new doctor's PMA. A patient will book a consultation online, and submit his/her information, avoiding any need for admin staff to input data onto the EPR/PMA. Anonymous data mining from the PHR will be of immense value to interested parties involved in healthcare, and herein lies the reason for the huge investment by Microsoft and Google.

The WWW has many, many applications to enhance medical practice, the details of which are beyond the scope of this article, but some home grown examples are [www.consentcare.net](http://www.consentcare.net), a system allowing surgeons to take detailed fully informed consent before surgical procedures. Other applications under development will take away the administrative drudgery of medical practice, with automated letter writing systems, automated investigation requests etc., all designed to save time and repetition.

Another example is a locally developed search engine for finding the world's most reputable Internet resources in healthcare - delivered by a local service [www.healthnetworks.co.za](http://www.healthnetworks.co.za). The Search Database option allows users to filter through credible medical and healthcare resources, delivering results that would otherwise take professionals hours.

Another new player in the market is Apple's iPhone, and the list of medical applications specially written for the iPhone already tops 200. <http://doctorcalc.com/> lists a few thereof. Considering that we all carry cellphones, these applications are certain to be very useful.

Further developments will involve the facilitative power of computers to capture and provide highly relevant information about patients to doctors, and then to relay relevant information to other service providers downstream, without taking up the administrative burden and time it does today. Doctors will be able to spend more time with their patients, with less worry about the detailed record recording process. This will still take place, but will be enhanced and take a form different to that of today.

### **The transformative power of ICT**

A final word at the close of this chapter is appropriate, and that is that ICT has already changed our lives in myriad ways in many other fields. The health industry may lag at present, but this change is inevitable. The benefits of making this change will be the practice of unburdened, effective and affordable medicine, where patients and doctors alike are empowered by technology. In an era where cost is spiralling out of control at the expense of professionalism, this is an opportunity for those brave enough to grasp it to advance medical practice into the new millennium.

**Good luck with your practice, and happy computing!**

<sup>i</sup> [www.iom.edu](http://www.iom.edu) - see Key Capabilities of an Electronic Health Record System, 2003

<sup>ii</sup> Jha, A.K., Ferris, T.G., Donelan, K., DesRoches, C., Shields, A., Rosenbaum S. and Blumenthal, D. 2006. How Common Are Electronic Health Records In The United States? A Summary of the Evidence. *Health Affairs*, 25(6):496-507.

<sup>iii</sup> Rogers E M (2003). *Diffusion of innovations (5th ed.)*. New York: Free Press.

Table 1: Used by permission, [www.ecizone.com](http://www.ecizone.com)